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July 13, 2004

VIA FAX & REGISTERED POST

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IPEA/AU

Attention: I.A. Barrett
Australian Patent Office
PO Box 200,
Woden ACT 2606
Australia

Dear Madam/Sir

RE: Response to Written Opinion for PCT Patent Appl. No. PCT/SG2003/000204

Applicant : Advanced Systems Automation Ltd.

Title: Handler For Semiconductor Singulation And Method Therefor

Our Ref : 1007.P056PCT/KJT/ayu

This is a response to the outstanding Written Opinion with a mailing date of May 13, 2004, for the above-identified PCT patent application. Enclosed please find four (4) pages of the Response to Written Opinion, a clean copy of claims 1-30 and a markup copy of claims 1-30.

We look forward to receiving affirmation of the objected claims 1-30.

Yours sincerely

LAWRENCE Y.D. HO & ASSOCIATES PTE LTD



George Liu

Encl.

Response to Written Opinion

This is a response to the outstanding Written Opinion with a mailing date of May 13, 2004 for the International Application No. PCT/2003/000204.

The Written Opinion raises three issues related to the clarity of the claims. See, VII (a)(b)(c). Claim 6 has been amended to be dependent upon claim 5. Claims 22 and 23 have been amended to be dependent upon claim 21. Applicants respectfully submit that the amendments made to claims 6 and 22-23 have addressed the issues of VIII(a)(b). There is no new subject matter added in the amendments.

The Written Opinion raises a very interesting point in VIII(c) alleging that the claims are not fully supported by the description because the Field of the Invention (page 1, lines 6-8) states that the invention relates to semiconductor singulation using a water jet system. Applicants respectfully submit that there is no available legal authority for limiting the claims to what the Field of the Invention states.

There are thirty (30) claims pending in this patent application: claims 1-5, 7-21, and 24-30 unchanged; claims 6 and 22-23 replaced by amended claims bearing the same number.

The Written Opinion objects to claims 1-30 for lack of novelty and inventive step in view of US 2002/0073575 (US '575); US 6250990 (US '990); EP 1028455 (EP '455); WO 2002/035585 (WO '585); JP 2001-060566 (JP '566); and JP 09-162270 (JP '270). The Written Opinion properly states that US '575, US '990, and EP '455 all disclose singulation of packaged semiconductor devices where a packaged substrate is moved from a loading location to a cutting location, cutting is performed in a first, then a second, direction, followed by transporting from the cutting location to an unloading location where singulated packages are unloaded. The Written Opinion also properly points out that Claim 1 and 17 of the present application are different from the prior arts because Claims 1 and 17 require the packaged substrate to be partially cut while mounted on a first movable mount, then transferred to a

second movable mount where further cutting produces singulated packages, which are then unloaded at an unloading location. While the Written Opinion correctly notes that the prior art does not disclose transferring the packaged substrate from a first to a second mount between cutting steps, it nonetheless alleges that the claimed inventions in the present application are to be a logical step taken by a skilled worker wishing to streamline the singulation process of the prior art.

Applicants respectfully traverse the objections for the following reasons.

The claimed inventions in claims 1-30 are represented by claim 1 which claims a handler for singulating at least one packaged substrate into a plurality of packaged semiconductor devices, wherein the handler comprises a first movable mount for moving between a loading location and a cutting location so that the first movable mount is adapted to receive the at least one packaged substrate at the loading location and to transport the at least one packaged substrate from the loading location to the cutting location; and a second movable mount for moving between the cutting location and an unloading location so that the second movable mount is adapted to receive the at least one packaged substrate that is at least partially cut at the cutting location and to transport the at least some of the plurality of packaged semiconductor devices from the cutting location to the unloading location. As indicated by the afore-underlined languages, the handler system as claimed in the present application includes two movable mounts that advantageously allow concurrent operations to be performed on two molded substrates, with cutting performed at a common cutting location. See, page 7, lines 12 to page 8, line 4; and page 15, lines 7-9. Applicant respectfully submits that the claimed inventions are not disclosed by the cited references individually or in combination, as discussed below.

1. US '575 HANDLER SYSTEM FOR CUTTING A SEMICONDUCTOR PACKAGE DEVICE

US '575 discloses a handler system with integrated processes including cutting, cleaning and drying so that the handler system can provide efficiency. See, page 1, [0006].

For the relevance to the present application, the attention is focused on the transferring processes connected to the cutting process. The handler system comprises an on-loader unit for loading a strip; a drawer unit for holding the strip; a strip transferring unit for the transferring the strip to a cutting device in which the strip is cut into individual package devices. *See, page 2, [0036].* It is evident that the strip transferring unit has to transport the strip from the loading location to the cutting location and, more importantly, wait for the finish of the cutting before it returns for another strip.

As discussed above, the handler system claimed by claims 1-30 include two movable mounts that advantageously allow concurrent operations to be performed on two molded substrates, with cutting performed at a common cutting location. It is evident that US '575 fails to teach or suggest the claimed handler system.

2. US '990 CSP PLATE CUTTING APPARATUS

US '990 discloses an apparatus for cutting CSP plates into individual pellets to put them on carrier trays for transportation including a jig rack for the storing of jigs for holding CSP plates. *See, Abstract.* More specifically, US '990 discloses that the first transporting means 60 transports the jig from the loading location to the machine table 61 and waits for the finish of the cutting before it returns to pick another jig. *See, Col. 7, line 34 to Col 8, line 11.*

As discussed above, the handler system claimed by claims 1-30 include two movable mounts that advantageously allow concurrent operations to be performed on two molded substrates, with cutting performed at a common cutting location. It is evident that US '990 fails to teach or suggest the claimed handler system.

3. EP '455 CUTTING -AND-TRANSFERRING SYSTEM AND PELLET TRANSFERRING APPARATUS

EP '455 discloses a cutting-and-transferring system similar to the one disclosed in US '990 as discussed above because both prior arts belong to the same assignee. Specifically, EP '455 discloses a cutting unit comprising a first transferring means 17 for transferring the

workpiece to the cutting location, a cutting means for cutting the workpiece, and a second transferring means 21 for transferring the cut workpiece. See, Col 5, lines 5-15.

As discussed above, the handler system claimed by claims 1-30 include two movable mounts that advantageously allow concurrent operations to be performed on two molded substrates, with cutting performed at a common cutting location. It is evident that EP '455 fails to teach or suggest the claimed handler system.

4. WO '585, JP '566, and JP '270

The Written Opinion also states that all three prior arts disclose the use of water jet devices for cutting in an analogous application. Then, the Written Opinion alleges that claims 3-6, 20-23, and 27-29 lack inventive step in view of the prior arts.

As discussed above, the claimed inventions of the present application represented by claim 1 are not taught or suggested by any of the prior art. Here, all the objected claims are dependent upon claim 1 either directly or indirectly. Thus, the addition of the prior arts related to water jet will not change the patentability of claims 1-30.

In summary, Applicants respectfully submit that to make an objection of lacking novelty and/or inventive step, the prior arts cited must teach or suggest the claimed invention in a patent application. Here, Applicants have shown that the six cited references fail to teach or suggest the features of the claimed invention of claims 1-30 individually or in combination. More specifically, the prior arts fail to teach or suggest a handler system with two movable mounts that advantageously allow concurrent operations to be performed on two molded substrates, with cutting performed at a common cutting location. Therefore, Applicants respectfully request that the objections to claims 1-30 be withdrawn.